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ABSTRACT

The necessity of design and planning for school restructuring with a macro focus on education systems design is discussed in this paper. Eight support and implementation strategies are identified: utilization of a formal change process; planned coordination; multiple sponsorship; formation of a grassroots collaboration network; external and internal advocates; metaplanning; pain management; and concerns management. A conclusion is that new models for schooling should be designed through a formal process rather than as variations of past instructional traditions. (21 references) (LMI)

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Major Issues in the Design of New Educational Systems*

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Introduction

During the past few years, we have seen a series of national reports calling for major reform in American education (National Commission on Excellence in Education, 1983; President's Education Summit with Governors, 1989; Education Commission of the States, 1983; Carnegie Forum on Education and the Economy, 1986; Governors' Association, 1986; National School Boards Association, 1988). Some of these reports suggest that current problems in American education are so serious that merely reforming the current operational model of schooling will not suffice. Rather, they suggest major restructuring or even replacement of the current schooling model with more efficient and effective systems of instruction and learning.

Unfortunately, few, if any, of these reports discuss how these new models of schooling should be created. Should they be allowed to grow up out of past tradition or should they be designed on the basis of current knowledge about learning, instructional design, child development, and management? In this paper, I will advocate that new systems of schooling should be designed and planned. These models of schooling should incorporate the best current practice and integrate the most appropriate educational technologies.

Why Design?

Few would be so foolish as to attempt to build a building without a detailed architectural blueprint. Likewise, we should not attempt to create new schooling models without design. Design involves conceiving and planning deliberate functions to achieve a predetermined end. Design is different from fixing, restructuring, or reforming. While these latter terms involve extrapolating from what now exists, design involves coming up with ways to achieve desired results irrespective of what currently exists. Unlike reform (which is making adjustments to what now exists), design is building something new based on needs and available resources. Reform is analogous to remodeling a building—design is analogous to constructing a new building to specifications and within cost constraints.

Design requires that we are not constrained in our thinking by current practice or by limitations which may not be relevant in a redesigned system. Our thinking is often so influenced by current practice that it becomes difficult to conceive of models or approaches that are not close copies of the current model. Hence, most recommendations for restructuring that we read about in the reform literature are attempts to fix, modify, or adjust the current model of education by adding supplemental programs, lengthening the school day, or increasing or decreasing certification requirements. None of these, you will note, change the fundamental operational model of schooling.

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George Leonard in his article "The Great School Reform Hoax" (1984) commented on the lack of fundamental changes in schooling by observing that:

> "Over the past hundred years almost every aspect of our national life—industry, transportation, communication, computation, entertainment—has changed almost beyond recognition. Our schools remain essentially the same. And now, in the space age, the reformers are offering the nation an educational horse and buggy. They would improve the buggy, keep the passengers in it longer, and pay the driver more. But it would still be a horse and buggy" (p. 50).

If we are going to design successfully, we cannot limit our thinking to what can easily be done within the constraints of the current model. Rather than improving a horse and buggy, we need to design and build a new mode of transportation.

One of the reasons design is necessary is because, without design, reforms in education do not remain in the system and improve over time. The history of educational reform has revealed a repeating cycle of optimism, implementation, pessimism, and abandonment—with classroom practice remaining basically untouched throughout the cycle (Cuban, 1988, 1990). One of the reasons for this cycle is that past reforms have disregarded the systemic nature of schools. The current operating structure of schooling is impacted and influenced by a variety of forces and support structures that work to maintain the status quo. The only reforms which have been successful in education are those that served to reinforce the existing system. If we have learned anything from past history of school reform efforts it is that we cannot change one component in the system without affecting everything else. If we try to significantly change one part, the system will always work to change it back again. Unless all interacting forces are considered and planned for in the design process, reforms in education eventually dissipate and go away.

Another reason redesign is necessary is because many of the more effective instructional methods cannot be put into place in schools as they are operated today. Educational research has revealed a variety of instructional methods, programs, and techniques that provide significant improvements in student learning (Cohen, Kulik, & Kulik, 1982; Kulik, Kulik, & Cohen, 1979, 1980; Walberg, 1984, 1986; Ellson, 1986). Instructional techniques such as frequent reinforcement, cues and feedback, relevant practice, mastery learning, cooperative learning, peer-tutoring, and computer-assisted and computer-managed instruction have all demonstrated significant practical improvements in instructional effectiveness or efficiency, or both. Unfortunately, most of these techniques and methods are difficult if not impossible to implement within the constraints of the current 30 students to one teacher cubicle model of schooling.

The current operating model of schooling is highly group-paced, time-oriented , and uses the teacher as the primary source of information (Goodlad, 1983). Many of the research-based instructional methods and techniques require different management, organization, physical, and instructional arrangements than are present in our schools. New methods and techniques require changes in the deepest structures of schooling; changes in the way schools use time and space, changes in resource allocation and accountability, and changes in classroom routines. New techniques and methods simply do not fit into the current structure of schools because they require management structures that are capable of sustaining and improving them. The organization and management structure that currently exists in schools is not capable of doing this.

What is Educational Systems Design?

Educational systems design involves the analysis, design, and development of educational systems. This can be contrasted with instructional systems design which deals with designing educational materials, courses of study, CAI curricula, or a mastery learning program. The distinction between educational systems design and instructional systems design is, in many respects, analogous to the distinction between micro and macro economics. Micro economics (which deals with economics in terms of a firm, business, or household) would be analogous to instructional systems design which deals with instruction in a course, class, module, lesson, or series of lessons. Macro economics (which deals with the general level of a national economic system and the interrelations among sectors of the economy) would be analogous to educational systems design which deals with designing whole educational systems.

Education must be viewed as a complex system of interacting influences at various levels—the individual student level, the classroom level, the school or institutional level, the community or school district level, the state level, and the national level. In addition, education is more than instruction. It includes the emotional, social, psychologocal, and physical development of children as well as their intellectual development. The home, the media, the peer group, the neighborhood, the community, the work setting, and many everyday-life situations all interact to produce learning. Educational systems design views all of these influences as integral parts of schooling. The idea is to plan and coordinate among these various influences to produce benefits and results beyond that which the separate influences would be capable of producing if working in isolation from the others.

Approaches to Educational Systems Design

Virtually all approaches to design include several common features:

1. They are results-oriented (that means that they prescribe in advance what results are desired by the new system).
2. They require the formulation of goals and objectives which must be defined beyond vague generalities and platitudes.
3. They require the generation and clarification of alternative approaches for reaching the stated goals.
4. They require the establishment of criteria by which to evaluate the alternatives.
5. They require continuous monitoring and evaluation to insure the dynamic relationship among parts of the system.
6. They require continuous revision.

These features are generic in that they are the same whether you are attempting to design a building, a transportation system, or a system of schooling.

Support and Implementation Strategies

Hesitancy to redesign and undertake major change is no where more evident that in education. Other important enterprises in our society (such as transportation, banking, and manufacturing) have undertaken dramatic changes during the past 50 to 100 years, yet education exists today in approximately the same form it did 50 or even 100 years ago. Those who would attempt to undertake a major redesign effort in education face tremendously formidable obstacles. The time is right, however, for these types of changes. Societal forces are forcing them upon us and there are some strategies which can, if not assure success, at least increase the likelihood of successful design and implementation of redesigned educational systems. At the Center for Educational Technology, we have identified eight strategies that we feel will increase the chances for

success. These strategies are: utilization of a formal change process; planned coordination between sponsors advocates, agents, and targets; multiple sponsorship; formation of a grassroots collaborators network; external and internal advocates; metaplanning; pain management; and concerns management. The following is a brief discussion of each of these strategies.

Utilization of a Formal Change Process

Introducing and institutionalizing large scale change requires knowledge of the change process itself. This includes the practical skills needed to influence persons who can cause changes and to insure continuing sponsorship. The body of research on change management is the source of the needed knowledge and skills in these areas. (Hall & Hord, 1987; ODR, 1990; Havelock 1971, 1973; Schmuck, Runkel, Arends, & Arends, 1977) This knowledge-base must be skillfully and consistently applied in any large scale educational design effort that is to be successful.

Planned Coordination Between Sponsors, Advocates, Agents, and Targets

In an educational systems design effort, it is important to identify those persons who are to play critical roles in the design and implementation process. At least four critical roles have been identified in the change management literature (ODR, 1990). These are sponsors, advocates, agents, and targets. Coordination and communication among each of these groups is critical to a successful educational design effort.

Sponsors are individuals or groups who legitimize the redesign effort. Only when a high ranking person sanctions redesign and dedicates staff and resources to the effort does that effort become truly legitimate.

Advocates are individuals or groups who want to achieve change, but who lack sufficient sponsorship. According to the change management literature, advocates without sponsors cannot achieve successful change.

Agents are individuals or groups who are responsible for implementing the change. In the case of educational redesign, agents are those who will be in charge of implementing the redesigned models of schooling. These would be state level and local level administrators.

Targets are individuals or groups who must actually change. These would be state and local school administrators and teachers.

One of the fundamental and critical skills pointed to by the change management literature is the ability to deal differently with sponsors, advocates, agents, and targets. For example, it is not usually possible to initiate large scale projects by talking only to other advocates. Nor is it appropriate to assume that targets will have the same concerns, attitudes, and perspective as sponsors. Each group requires different types of information, communication, and collaboration.

Multiple Sponsorship

Successful redesign requires obtaining multiple sponsors. Because redesign is such a large-scale enterprise, it will be necessary to have sponsors at multiple levels within multiple organizations. By multiple levels, I mean persons at different levels within the educational bureaucracy who contribute either funds or other resources to the design effort. In this way, there is less chance that the redesign effort will be scrapped when one individual leaves or becomes occupied with other interests. By sponsors in multiple

organizations, I mean persons in different governmental agencies (e.g., school districts, state department of education, state legislature, the governor's office, or teachers' unions) who contribute to sponsorship of the redesign work.

One of the most challenging aspects of macro-design is obtaining both initial and continuing sponsorship. Initial sponsors are those who provide start-up funds and resources at the beginning of an effort. However, because redesign will require a long-period of time (probably 5-8 years) continuing sponsorship will be necessary. Initial sponsors and continuing sponsors may or may not be the same people. Initial sponsors may leave their positions or become involved in other projects. What is desired ideally is for sponsorship to cascade from a single initiating sponsor to multiple continuing sponsors. This is sometimes extremely difficult to achieve in an environment where high-level administrators or political figures desire to fund and support only short-term projects which will render short-term results.

Grassroots Collaborators' Network

The contemporary literature on change management stresses the necessity of participation, collaboration, and consent of all parties to be affected by the change. "Bottom-up" approaches rarely address system-wide problems. Systematically designed "top-down" solutions often address the full scope of problems, but are administratively difficult to implement and sustain. Blending both approaches requires the collaboration of all affected parties, including school districts, state level personnel, community colleges, and colleges of education.

Educational redesign must include a collaborator's network—a group of selected school districts that collaborate in aspects of the design process and agree to demonstrate the redesigned models of schooling. Knowledge about local issues will contribute directly to the design effort. In addition, school districts can be shown through this process that alternative models of schooling will meet their instructional requirements more effectively. When the new models of schooling have been designed and developed, it will be necessary to continue their development in real world settings. The new models should be capable of accommodating continuous improvements without disruption of ongoing activities. The school districts are the ultimate "targets" of redesign but, through a collaborative effort, can become fellow advocates in the redesign process.

External and Internal Advocates

Successful large-scale change requires a broad base of support and advocacy. For this reason, those involved in educational redesign should foster relationships with fellow advocates and sponsors both within and without the educational establishment and the local, state, and national levels. Advocacy from private citizen groups, teacher organizations, professional associations, various governmental groups and agencies, and political figures must be acquired and orchestrated if enough momentum and support is to be generated for the redesign effort to be successful.

Pain Management

Decision-makers in any enterprise are generally hesitant to enter into major redesign efforts due to the frustrations inherent in the change process. Before sponsors will initiate change, they have to believe that the pain of maintaining the status-quo is, or will be, greater than the pain of change. Pain management (ODR, 1990) is the process of consciously surfacing and orchestrating information which accurately shows the cost of continuing the status-quo and the comparative costs and benefits of the redesign effort.

Memos, briefings, and meetings should include constant reminders that the frustrations being experienced during the change process prevents greater frustrations later on.

Metaplanning

Metaplanning, as used here, refers to the incorporation of major recommendations from a variety of plans into the blueprint for redesign. Metaplanning incorporates proposals and recommendations from other highly visible and credible plans that are consistent with the specifications and goals of the redesign effort. Part of the reason for doing this is to give face validity and credibility to the redesign effort.

Concerns Management

Concerns management refers to a set of skills and techniques for assessing and addressing the individual and group concerns of those involved in the redesign process. These concerns management procedures include such things as Stages of Concern, Concerns Interventions, and Levels of Use.

Stages of concern is a concept derived from the research of Hall (Hall & Hord, 1987) on change in schools. Hall's work shows that concerns expressed by persons involved in a change process can be classified into four categories: (a) unrelated concerns, (b) self concerns,(c) task concerns, and (d) impact concerns. In addition, Hall has found that concerns tend follow a general pattern of progression and he has developed a variety of valuable instruments to assess concerns at different stages of the change process.

Concerns interventions are practical prescriptions for handling different types of concerns in an effective and appropriate manner. Examples of concerns interventions are legitimizing the expression of personal concerns; responding to personal concerns through meetings, memoranda, and newsletters; or establishing mentor systems or support groups.

Levels of use refers to another concept of Hall which focuses on the need to assure that the new model has been adopted, effectively implemented, and institutionalized. Levels of Use prevents us from making conclusions about the new model without assessing if it has been fully or only partially implemented. Hall also offers procedures and instruments for assessing the level of implementation. Levels of Use is a valuable tool for allowing designers to identify which behaviors and practices are *not* taking place in the new model.

Conclusion

In conclusion, there is a great deal of evidence that new models of schooling are needed. I advocate that new models be designed through a formal process rather than be allowed to grow up as variations on past instructional traditions. Getting new models of schooling supported and implemented will be a major challenge, however, the time appears right for such efforts. Hopefully, the strategies I have outlined in this paper will assist in developing and implementing new models of schooling.

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